approach

AUGUST 1979 THE NAVAL AVIATION SAFETY REVIEW

FAA Clarifies

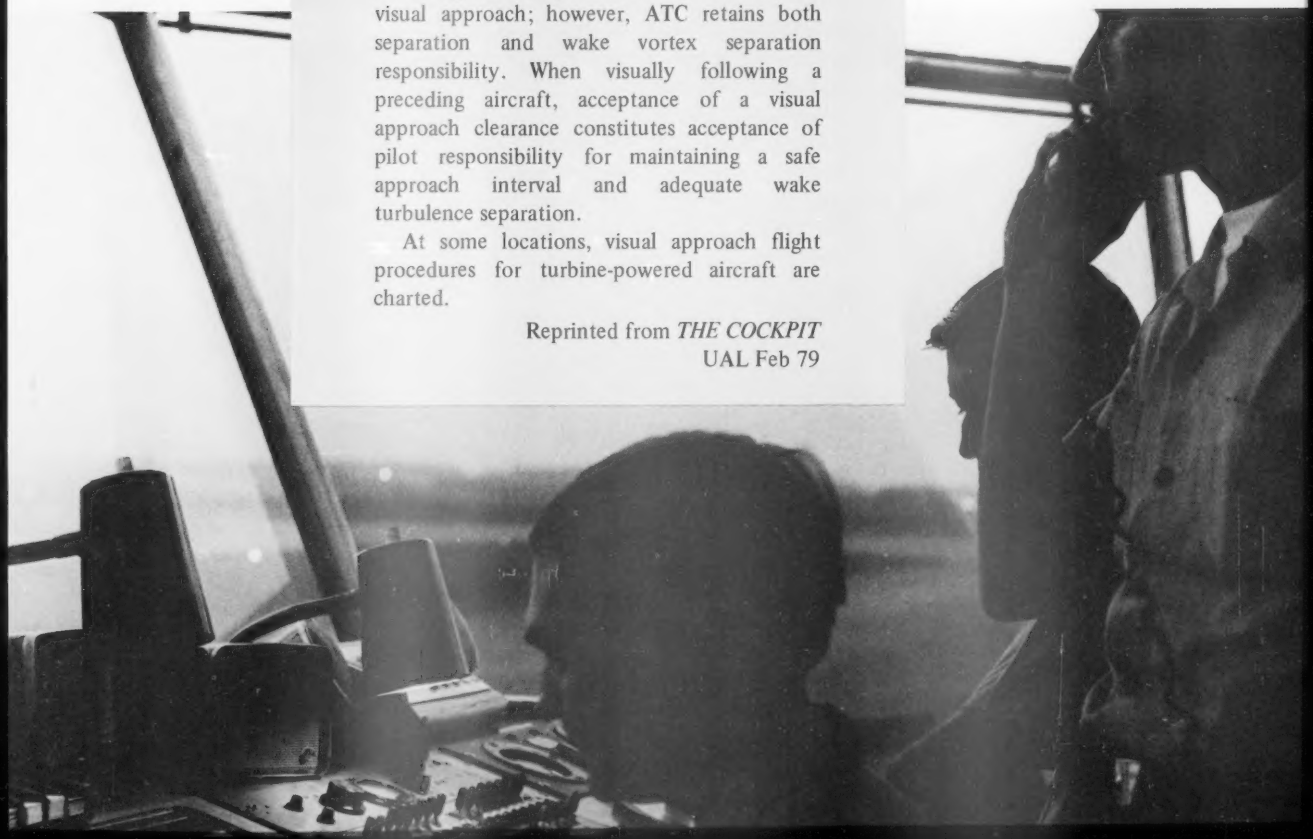
"Cleared for Visual Approach"

HANDBOOK 7110.65A-796.c. (6) permits a controller to clear an aircraft for a visual approach if the airport is in sight, even if the preceding aircraft is not in sight, provided that the controller continues to provide separation between the aircraft. Confusion has been reported in the application of this procedure wherein pilots were not aware that a flight can be cleared for a visual approach and not see the aircraft to be followed.

The following revision to AIM-383, "Visual Approach," paragraph a, has been made to clarify this aspect of the procedure. This revision will be published in a forthcoming issue of the Airman's Information Manual. Following is FAA's change to AIM:

> a. ATC may authorize an aircraft to conduct a visual approach to an airport or to follow another aircraft when flight to and landing at the airport can be accomplished in VFR weather. The aircraft must have the airport or the identified preceding aircraft in sight before the clearance is issued. If the aircraft has the airport in sight but cannot see the aircraft he is following, ATC may still clear the aircraft for a visual approach; however, ATC retains both separation and wake vortex separation responsibility. When visually following a preceding aircraft, acceptance of a visual approach clearance constitutes acceptance of pilot responsibility for maintaining a safe approach interval and adequate wake turbulence separation.
>
> At some locations, visual approach flight procedures for turbine-powered aircraft are charted.

Reprinted from *THE COCKPIT*
UAL Feb 79



Vol. 25 No. 2

approach

NAVAIR 00-75-510

This month's cover is a painting of an F-5E and an F-5F by Northrop artist Harlan Krug.

Few accidents have captured the attention of naval aviation as much as the intentional ditching of a P-3 several months ago. Although the ditching itself wasn't a first for a Navy aircraft, it was unusual. The conduct of the ditching, as well as the rescue of the survivors, was remarkable. This is the story of the . . .

Ditching of

Flight 586

THE crew awakened at 0400 in late October for a routine patrol. All were in good spirits and no one realized that it would be a couple of weeks before some would return home, or that others would not return at all. Briefing was conducted between 0500-0545. After breakfast, a thorough interior and exterior preflight revealed no downing discrepancies. Everything was ready to go; they took off at 0845.

There was a strong occluded frontal system, spawned by an intense low, in the operating area. The weather brief called for variable overcast 2000 to 4000 feet, multiple layers to FL310, surface winds southwest at 30 shifting to northwest at 40, icing in clouds, scattered rainshowers and snowshowers, and visibilities generally good, except reduced in showers. The day was no different than many others.

After takeoff, they climbed to transit altitude and proceeded to a briefed geographical point. They descended to operating altitude and proceeded to investigate a tanker and a Soviet fishing trawler. The latter would play a very important part in the ensuing drama.

During the next several hours, the weather began to deteriorate. The No. 1 engine, which had been shut down, was restarted and, after a warmup period, was brought on the line. At 1300, the pilot tried to marry all four power levers at cruise setting, but the No. 1 RPM gage began to fluctuate, accompanied by an audible overspeed.

Their troubles were beginning. The flight engineer conducted a light check and turned the No. 1 synchronizer switch off, but the No. 1 prop RPM climbed through 105 percent. A decision was made to feather No. 1 with the E-handle. Fuel flow and horsepower dropped to zero, the TIT started to decrease, but the prop RPM rose to 131 percent.

The crew in the cockpit knew they had real problems. The pilot reduced power and started a climb to slow the RPM. He called for the "prop fails to feather" procedures and ordered the crew to don helmets. The overspeed was so loud no one could hear very well. The light in the feather button was on. Procedures for operating with a prop that fails to feather were not completed. The E-handle wasn't reset, the oil tank shutoff circuit breaker wasn't pulled, and the E-handle wasn't pulled out again.

At 1305, the aircraft was indicating 145 knots at 10,500 feet, and the No. 1 prop RPM seemed to stabilize at 115 percent. The pilot turned toward an island and sent an "abort mission" message. Five minutes later, a thin film of what seemed to be hydraulic fluid (caramel colored) was seen on the No. 1 prop afterbody. At the time, they were flying in the clouds and picking up ice. The pilot ordered the crew into their antiexposure survival suits (QD-1), and had all loose objects throughout the aircraft secured.

Control, this is 586, we're a P-3. We have a propeller malfunction at this time. Our position is N 52-22/164-30 E. Altitude is 11,000, TAS 154, groundspeed 194. We are proceeding direct Shemya.

586, this is Control. Copy. Request number of souls onboard.

This is 586. Fifteen souls onboard.

At 1320, the No. 1 prop was seen to wobble and, at 1335, the RPM gage fell to zero, with the prop speed still over 100 percent. No annunciator lights were on. At 1338, an emergency was declared, but control was advised that they were not in *extremis* – yet. Meanwhile, back at the squadron, an alert crew was told to get moving.

The No. 1 firewarning light came on at 1340, after a small amount of smoke was seen coming from the top of No. 1 engine. The flight engineer discharged the first HRD bottle (fire extinguisher), and the firewarning went out. The pilot began a gradual descent. Shortly thereafter, the flight engineers swapped seats and the new flight engineer restored oil to the No. 1 engine reduction gearbox by completing the "fails to feather" procedure. When oil was restored, there was no indication of oil pressure, but there were 7 gallons of oil in the tank. White smoke poured from the No. 1 engine, and, again, some caramel-colored fluid was visible aft of the prop. The pilot ordered the oil tank shutoff circuit breaker reset, and the smoke stopped. The No. 1 prop pump light flickered, chip lights came on, and then the No. 2 prop pump (or oil pressure) light came on.

Control, this is 586. We have 15 souls onboard, about 6 hours of fuel, presently at 8000 – trying to maintain 8000. Request you launch SAR aircraft to intercept us. We are heading 100 true. Position N 52-28/165-16 E. We're requesting you launch SAR aircraft at this time.

A second firewarning light on No. 1 came on at 1352, and both sparks and flames were seen in the nacelle. The last HRD bottle available was activated, and the firewarning light again went out. The pilot transmitted a Mayday.

Control, this is 586. Mayday, Mayday, Mayday! Position N 52-27/165-59 E. Heading is 123 true. Groundspeed 143. We are ditching. Fifteen souls onboard. Three orange liferafts. Two hundred ninety miles west of Shemya. UHF DF 345.5.

The crew didn't know it, but they would remain airborne for about 30 minutes more.

Control, this is 586. Revise our intentions. We are level 1000 feet, still proceeding direct. Will revise as our status changes.

At 1359 (0+31 before ditching), the pilot notified Control that No. 1 engine reduction gearbox was a total failure, that they were still on course for Shemya at 500 feet, and that all persons were wearing orange or green antiexposure suits. The inevitable ditching loomed closer.

At 1415 (15 minutes before ditching), an Air Force C-135, the squadron P-3 alert crew, and a Coast Guard C-130 were en route or ready to go to the aid of the crippled P-3.

About 1420, the radar operator aboard 586 reported a surface ship at 290 degrees at 16 miles. The pilot headed for it. A few minutes later, 586 was contacted by the squadron P-3.

586, this is 675, over.

This is 586. Hi, guys. Our posit 52-37/167-38. We have 15 SOB, three orange rafts, UHF DF 345.5. Our No. 1 prop has dried up, it's vibrating wildly, and we'll be going down in the near future. Over.

This is 675. Roger. Matt, this is Denny. We're rolling now.

This is 586. Roger, Denny. We're 235 west of Shemya. By our best guess, there's a Russian "fisher" factory near us.

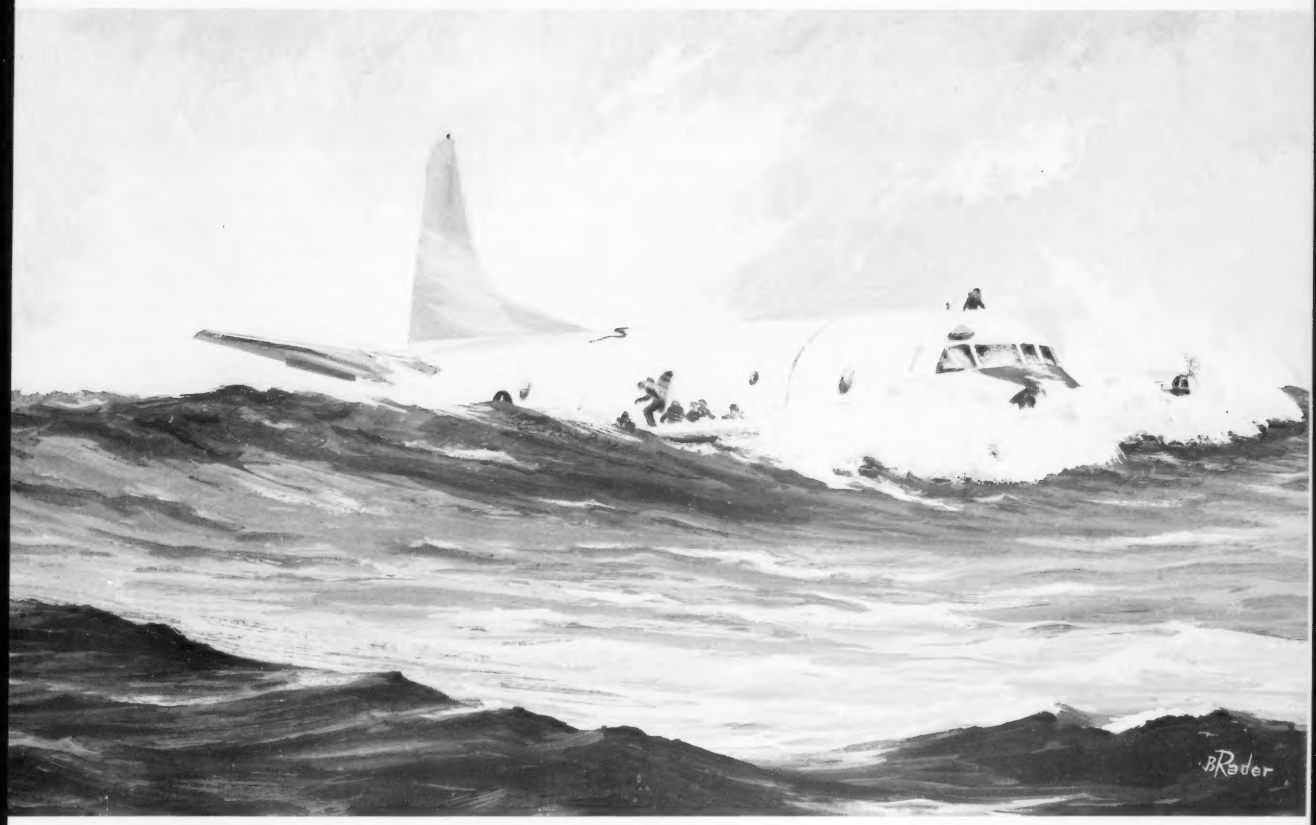
This is 675. Roger, copy. We'll be looking for you. We're going now.

At 1430, there was one final transmission from the crippled P-3.

Control from 586. Twenty seconds to ditch. Position N 52-40/167-25 E. Passing through 200 feet. We have 15 SOB, three orange rafts, and all personnel in orange or green antiexposure suits. Passing through 150 feet N52-39/167-24. This is 586, out.

The pilot ditched with gear up, approach flaps, 120 knots indicated, 50 fpm rate of descent, and headed into the wind. The aircraft hit, skipped, hit hard, skipped, and then slammed to a stop. It began to fill with water immediately.

The cockpit crew went out through the overhead hatch. The rest, at various ditching stations, headed for the nearest exits. Three went out the port overwing hatch, and six



went out the starboard overwing hatch. One crewman was not seen after the ditching.

One Mk-7 and one Mk-12 liferaft were launched. A second Mk-7 could not be released from its restraining straps and, with the water level in the aircraft rising fast, it was abandoned. Emergency lighting, although turned on before ditching, failed, and the aircraft was completely dark.

Outside the aircraft, the starboard wing had been torn off, there was a large crack in the fuselage aft of the main cabin door, and water was pouring in through the hydraulic service center. The inside of the aircraft was in shambles. Panels were torn loose, windows imploded and exploded, some bulkheads gave away, and the nav table and other tables were torn off. Finally, the emergency sonobuoy couldn't be released from its holder and it, too, was abandoned.

The survivors to starboard began entering the Mk-7. One survivor saw the Mk-12 drifting away, dove in, and caught it. The three survivors who got out on the port side swam around the aircraft tail and boarded the MK-12. The other nine climbed into the Mk-7. The pilot remained momentarily above the cockpit, as if counting, and then dove in to head for a raft. The delay proved fatal. He was seen swimming toward a raft, but the raft was drifting away faster than he could swim. (The rafts had become disconnected from the aircraft just after launching due to the heavy sea state.) Some of the men in the raft jumped into the water and started kicking, while the rest in the raft began paddling toward the pilot. This didn't help and, after a minute or two, the pilot was never seen again.

The aircraft sank in 4 minutes. Thirteen survivors were alive when they entered the liferafts and, except for one who had received severe back and leg bruises during the ditching, all were OK. That was just short of miraculous!

About an hour and a half after ditching, an Air Force C-135 appeared on the scene. The spirits of the survivors were greatly raised. The aircraft reported to SAR head-

APPROACH (USPS 016-510) is a monthly publication published by Commander, Naval Safety Center, Norfolk, VA 23511. Subscription price is $15.00 per year; $3.75 additional for foreign mailing. Subscription requests should be directed to: Superintendent of Documents, Government Printing Office, Washington, DC 20402. Controlled circulation postage paid at Norfolk, VA.

quarters he had two rafts in sight, but the heavy seas and rain prevented him from getting an accurate count of survivors. Within another 30 minutes, the squadron alert crew arrived, relieved the C-135 (who headed for altitude to act as radio relay), and the P-3 SAR dropped smokes and sonobuoys to mark the two liferafts. Seas were rough, and it was cold and raining. The survivors in the liferafts assisted the SAR crew by using all signaling devices on a regular basis.

About 1915, the SAR crew dropped a SAR kit upwind of one raft, but so close that the survivors just reached out and grabbed it. The SAR kit was too heavy to take aboard, so it was lashed to the liferaft.

An hour later, after a Coast Guard C-130 SAR arrived, the P-3 crew found the Russian trawler, and made numerous low-level flyovers while flashing C-E-F (aircraft in the water, follow me) with their lights. The ship headed for the survivors. The P-3 SAR crew then left station with the Coast Guard C-130 in charge.

All through this time, the survivors were having to bail continuously, with an almost useless bailer, to keep the liferafts from swamping. Those in the Mk-12 raft had a canopy which helped them a little bit. Those in the overcrowded Mk-7 raft were sitting in waist-deep water, and exposure began to take its toll. The weaker men became lethargic and had to be propped up to keep them from sliding overboard. They also had to be shouted at over and over again and occasionally slapped by the stronger ones, in order to keep them awake.

By 2200, the CG C-130 pilot established voice communications with the trawler and received an ETA at the rafts of 2400. About 2300, one crewman succumbed to exposure and by 0100, while the trawler's small boat was picking up the survivors in the Mk-12, another crewman just rolled out of the raft and floated face downward. A third crewman died while the survivors of the Mk-7 were being picked up. By 0230, the 10 survivors, and the bodies of the three dead, were recovered by the Russians.

All of the survivors were extremely weak, unable to move without help, and were unable to talk. Aboard the trawler, they were stripped, wrapped in warm blankets, given hot tea and hot baths, and treated for exposure by the ship's doctor. They were then put to bed and carefully watched for the next 24 hours. The rescue crew in the trawler's small boat provided yeoman service in order to successfully pick everyone up.

Meanwhile, other Navy, Air Force, and Coast Guard SAR crews searched from daylight the next morning for the missing pilot and crewman. They had no luck. SAR operations continued, but after 3 days were suspended due to impossible weather conditions. Eventually SAR efforts were canceled with no success.

The survivors aboard the trawler recovered quickly under the expert care they received. The trawler headed for port and, after about a week, the survivors and the bodies of their shipmates were flown home.

The way in which the ditching was conducted was letter perfect. Fourteen of the 15 aboard were able to leave the aircraft, and 13 of them made it safely into rafts. Had the seas and weather conditions not been close to impossible, all 13 would have returned.

The continuous efforts of the survivors attested to their bravery, ingenuity, and concern for each other. Each one tried, to the best of his ability under extreme conditions, to ensure that all survived.

The crew wasn't able to exit the aircraft, or launch all of the liferafts, by the book – but then when has an actual ditching ever permitted the time to do it by the book? This was a rare P-3 ditching accomplished under extreme weather and sea conditions. It was indeed miraculous that so many survived.

As a result of survivor reports, and narratives of their experiences, many suggestions were made:

- To strengthen various structural areas in the P-3.
- To make the release of liferafts, water breakers, and the emergency sonobuoy easier to accomplish.
- To improve emergency lighting.
- To provide canopies for all liferafts.
- To make available two-way voice emergency radios to all crewmen.
- To add a weighted throwing line to the liferafts.
- To consider special cold weather survival equipment for arctic area operations.

Hopefully, all of these suggestions and lessons learned will enhance the safety and survivability of downed aircrewmen in the future. ◄

No one gets ready for an emergency in a moment. What a person does in an emergency is determined by what he had been doing regularly for a long time.

U.K.'s National Safety Council

The women are coming?
THE WOMEN ARE HERE!

JUST in case you haven't noticed yet, women are infiltrating almost every aspect of military aviation – ASW, fighter-attack, helo, and even the flight surgeon community. (Better check – your next flight physical may be done by a petite-fingered female!)

The big change began about 6 years ago when ADM Zumwalt first authorized flight training for females, and, a little while later, flight surgeon training for females. As expected, the ladies have had problems, both with their physical design (petite, low-weight frame), and with their acceptance into the male-oriented military aviation community.

Many of their male counterparts were unwilling to accept the fact that the girls can fly aircraft just as well as they. This finding was nothing new, however. During the Second World War, women were used extensively as ferry pilots of all types of military aircraft (remember the W.A.S.P.s?). The girls were formed into a militaristic civilian community and were required to handle just about every type of state-of-the-art military aircraft. They did an excellent job, their accident/incident rate and fatality rate being no higher (even nonsignificantly lower) than that of their male counterparts doing similar duties. The amount of effort devoted to their training also equaled that of their male counterparts. The ladies asked for no special favors, and apparently were granted none (except, perhaps, for occasional displays of good upbringing by their male counterparts).

During the past 6 years, many of the women have weathered the "threatened" male aviators' objections, and have done a good job. Of course, there are those who asked for, and lamentedly received, special privileges, but still made the grade (with well-earned male peer antagonism). And then, there is the growing group who have decided that military aviation is definitely not what the doctor ordered.

Today, with the ERA "threat" and women's "lib," it could be expected that the lady "pioneers" would be treated as "one of the group" by the system. Until very recently this was not the case. Unjustified waivers and special considerations were granted. The involved women expected these deviations from the norm simply "because they were women." But, military aviation is, hopefully, a game played with one set of rules, and apparently this will henceforth be the case.

Another problem the ladies face is their petiteness, in relation to the male frame. Military cockpits, and personnel protective and survival gear were designed for the average male frame. Air Force static anthropometric studies seem to indicate that the fifth percentile male is roughly equivalent to the 80th percentile female. So what?! Well, in order that female aviators fit the present day cockpits and gear, 80 percent of the female population should automatically be rejected for aviation duty. Notice, we said should. The Navy has recently recognized the severity of this problem and now requires that all prospective female naval aviators meet the male norms. Discrimination? Hardly. If you can't reach a switch, or a lever, or the rudders, or if the strength just isn't there to accomplish a necessary action, or if survival gear doesn't fit or, worse yet, the ejection seat just wasn't designed for a 105-pound frame with a different center of gravity, a definite problem exists.

Almost miraculously, not one of our aeronautically designated female personnel has, as yet, experienced her first accident. Hopefully, the Navy's recently organized studies on dynamic anthropometry and the female's general relation to the aircraft will be completed, and their findings implemented, before such a happening occurs.

Am I, the author, a male chauvinist? Heck no! I'm just one of the aeronautically designated females who has made it, by asking no favors, and wants to keep the score straight.

Damn the Chocks – Full Speed Ahead! During the preflight of a line of TA-4s, a maintenanceman backed his NC-8 power unit next to one of the *Skyhawks* for its morning electrical checks. He *allegedly* chocked the vehicle, put it in neutral, set the parking brake, and placed the NC-8 at output power.

The power unit paid no heed to the chocks, brakes, or neutral gear setting as it traversed the flight line for 100 yards and impacted an adjacent TA-4. Instead of a preflight, it was rescheduled for O&R (overhaul and repair). Damage was extensive – sheared nose landing gear, crushed nose cone, bent refueling probe, punctured droptank, twisted bomb rack, bent main landing gear door, a slightly dinged-up NC-8, and a thoroughly confused driver.

Sounds like a case of "jumping the gun" and not *ensuring* that the vehicle was properly chocked, braked, and neutralized before applying output power. Above all, don't let the clutch out rapidly! E-A-S-E it out to doublecheck that the unit is in neutral. Maintenancemen, take your time. We have enough trouble at times keeping the birds in the air ourselves, so please, don't let them die on the ground. Haste makes waste, as it did in this case.

Inadvertently Unchained Phantom. Last month there was the case of the *Inadvertently Chained Phantom*. Now we have its sequel. Picture this unscheduled and unwanted mishap aboard one of our carriers at sea.

The F-4 was spotted on the flight deck, port side, aft of the LSO platform with its tail hanging over the deck edge. The *Phantom* was in six-point tiedown with chains longitudinal to the aircraft's axis. All secure – at least one would think so. However, turn the ship broadside to abnormal sea swell direction, then stand by for a ram!

The magnitude of the roll to port was approximately double that of the prevailing trend. All three chains restraining rearward motion of the aircraft failed at the turnback fitting, thereby allowing the F-4 to roll backwards into the catwalk. It came to rest on its centerline tank, wing pylons, forward engine bay doors, and port wingfold area, causing Delta damage to the aircraft. Later, as the F-4 was being extracted from its precarious position, additional damage was inflicted by the ship's mobile crane suspension straps.

It was fortunate that the *Phantom* didn't go all the way over the side and into the drink. Thanks to the catwalk and other three chains, it didn't. The forces of "Mother Nature" are often unpredictable and ill-timed. This was one of those times when *all* seemed to be done properly, but the ship's turn, coupled with the heavy sea state, caused the tiedown devices to fail. Sometimes the preventable has trouble being prevented. Nevertheless, continued efforts to minimize mishaps of all kinds must be paramount in the aviation/ground environment.

Alert the Transient Lines. *It only cost about $50 and 10 hours to repair the damaged wingtip area on the C-9, but it could be much more next time if transient line personnel are not properly trained and supervised.*

After landing at NAS Testo-Testo for offload of passengers and cargo, the pilot was instructed to taxi to the base of the tower, so the aircraft could be parked with the port side facing the tower. The aircraft turned 90 degrees right of Bravo taxiway onto the ramp

in front of the tower, where it was turned over to the taxi director. The *Skytrain* II continued straight ahead as directed, anticipating a turn to the *right.* Instead, the taxi director signalled a turn to the *left!* To add to the confusion, a second lineman took the wands from the taxi director (who by now was thoroughly mixed up) and signalled a turn to the right. The aircraft turned to the right approximately 120 degrees when the crew heard and felt a slight thump. The "new" taxi director did not signal to stop but, instead, continued to direct the C-9 forward another 50 feet or so. At that time, the transport crew was advised by Tower that they had struck a parked Navy vehicle with their port wingtip!

This incident was caused by inadequately trained ground personnel assigned to the transient alert section of the airfield. The director was not familiar with the proper taxi signals, and he failed to utilize personnel standing by the parked vehicle as wing-walkers/advisors. It's comforting to some (not the crew) to know that these "observers" tried to warn the director of the impending crunch, but by what means no one really knows.

Wingtip clearance cannot be accurately determined from the cockpit of the C-9 (and several other type aircraft, for that matter), so ground personnel must be relied upon to assure proper clearance. If there is any doubt in the mind of *any* aircrew or the director, the aircraft should be stopped and the situation investigated. The assignment of personnel to transient line crews, and their supervision, cannot be taken too lightly. The mission of the VR community (and others) obviously requires the use of transient line crews for the majority of parking operations. It is not realistic for the plane commanders to check the certification of line crew personnel before every parking evolution. Certification and qualification must be assumed. In this case, the trust was violated since the crewman on the line was not qualified, and a serious accident was narrowly averted. Air station commanders – please ensure that your transient line crews are adequately trained and supervised, so aircraft transiting your bases may do so in a safe and secure manner!

THE NUMBERS GAME

Who Can Afford to Play?

By LCDR Vance Parker
VF-213

THE numbers game is played by almost everyone in naval aviation who aspires to excel; CAG wants his air wing to outperform all others, the squadron CO aspires to win the Battle E and/or the CNO Safety Award, and each naval aviator hustles to fly more hours, more ACM missions (if he's a fighter pilot), and accumulate a few more traps than his buddies. How can these achievers attain their goals? It's easy – do it with numbers, lots of numbers!

Total flight-hours, sorties flown, carrier landings, field landings, missiles fired, bullets fired, etc., are all very important numbers. Generally speaking, squadrons and air wings are sorted, classified, and ranked by higher authority utilizing these very statistics as a yardstick. The formula employed is extremely simple – the squadron or air wing that produces the highest numbers is the winner. The importance of this numbers game is apparent each time a squadron submits its nomination for a local or fleet-wide award. As an example, the CNO Safety and the Battle E are worthwhile and highly coveted awards. However, those blanks on the submission forms must be filled with numbers, and invariably the highest total will take the prize. So, we see the numbers game is at least tacitly encouraged throughout the chain of command.

The question as I see it is simply this, "Is this the principle tenet we should foster at the squadron level?" As the aviation safety officer, I say **no!** In the aviation business, especially carrier aviation, we cannot set our sights on the record book (i.e. – most flight-hours, most carrier landings, or most sorties per line period). This approach

often leads to pressing – forcing maintenance personnel beyond their limits, tending to fly marginal airplanes, and persuading pilots to extend themselves without proper rest. If this full-court press succeeds, the numbers increase and the squadron ostensibly looks good. If it fails, every endorser will silently wonder why the same basic human errors were made in the tragic AAR that lays before him.

So you ask, "If I don't play the numbers game, can I have an aggressive, competitive squadron?" The answer is an unequivocal **yes!** The concept begins at the bottom of the totem pole, is something over which everyone at the squadron level has control, and is echoed through the skipper himself. The first premise is **don't fly airplanes that are less than 100 percent up.** Ensure the primary maintenance goal is producing FSC (full systems capable) aircraft, not aircraft that can limp into the air without the ability to perform your primary mission. Secondly, **allow maintenance supervisors adequate time to accomplish each task correctly.** Avoid forcing maintenance into errors or taking shortcuts by demanding that a 10-hour job be completed within 5. Finally, constantly **monitor the performance and rest of all personnel (aircrew in particular).** A pilot who stood the 0330-0530 alert, flew once during the day, and has not slept should be considered an extremely high safety risk when scheduled to fly the last night event.

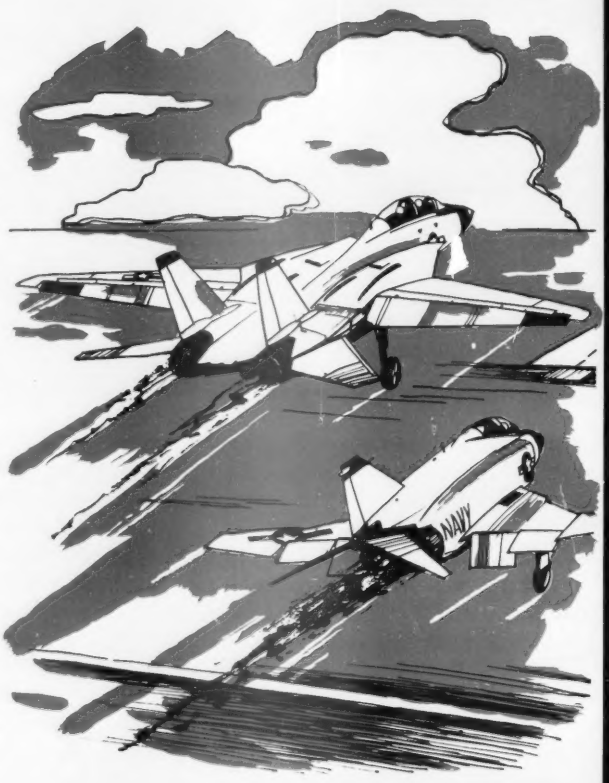
This doctrine does not contradict the concept of a successful, aggressive squadron. When your airplanes are up, fly them to the limit! Make your ACM adversary wish he were in another profession, then return to the ship for an OK 3-wire pass. Of course, abiding by this viewpoint is easy with 70 percent of your aircraft in an FSC status. The real test of a squadron's mettle occurs when things are not going so well. On this kind of day, it may take a super-human effort just to have two aircraft up at the day's beginning. Worse yet, the ORE is less than a week away, and the aircrews are grumbling about no flight time. This situation could easily tempt any CO to pressure maintenance into producing a couple of "flyable birds" to meet the flight schedule. If he does, the first piece of the puzzle that can lead to an avoidable accident has been placed.

Consider this scenario:

A squadron, because of a lengthy NORS list and a last-minute spoiler modification program, faced this situation: reduced aircraft availability immediately prior to the biggest numbers game of all – the ORE. But, the Skipper set the standard and did not waiver. They flew only FSC aircraft throughout the ORE; anything less was down until repaired. Now, 2 months later and deployed to the Mediterranean, all aircraft have returned from the spoiler modification, the NORS list is small, and they're flying their share of the CV sorties – just as it should be.

As a safety officer, I'm pleased to say that this squadron faced the dilemma of playing the numbers game versus safety and meaningful training, and passed with flying colors. The life or death question may be, "How would your squadron react if it faced a similar situation?" ◄

A MISS IS AS GOOD



THE weather was nearly ideal for recoveries – 25,000 scattered, 30 miles visibility, temperature 72°F, and the winds calm – as the fighters returned home to roost. An F-4 received tower approval to conduct a straight-in approach to Runway 24R, as a flight of F-14s approached the field to enter the break. One of the F-14s experienced hydraulic problems and elected to make a straight-in (no emergency was declared and no deviations from a normal approach were expected). The tower controller, having received the *Tomcats* from Approach Control, without being forewarned of the problems, asked the F-14 his position. The reply was . . . "13 miles east." The controller thought that there were 10 miles separation between the F-4 and the F-14; however, the NAS Homeplate TACAN was "down" and the ailing F-14 was actually giving his position off the Western Bay TACAN, some 10 miles to the west of the NAS! The two aircraft were only about 3 miles apart at this time, not 10 as suspected.

Unaware of the impending dangerous situation, the controller then asked the *Phantom* for his position. The reply . . . "3 miles on final." The *Tomcat* was then cleared to land number three behind the *Phantom* and another F-4 who was on short final. Not all involved knew that the F-14 was making a straight-in at a significantly higher and faster approach than the F-4, who was making a slower and lower-than-normal straight-in to the same runway. Several seconds later, the F-14, descending from aft and above, informed the tower that he did not have his "traffic." The tower missed this transmission and responded to another aircraft instead. The tower then asked the F-14 if he had the "traffic," but received a garbled reply. Still another query, only this time the reply was . . . "Negative, Tower."

In a final attempt to unravel this "Who's on first?" encounter, the tower reported that the F-4 was . . . "Over the ridge, three-quarters of a mile from the runway." (Note: the "ridge" is actually *slightly more* than 3 miles from the runway.) The F-14 transmitted that he was "over the highway, in the groove" and due to the hydraulic problem, "was going to land"! At this time, the RIO in the *Phantom* got the picture when he heard the transmission, "over the highway," for they, too, were over the highway! He looked up and aft just in time to see the encroaching *Tomcat*, less than 100 feet above him and his unaware pilot! The startled RIO instantly informed his pilot of the impending midair. The adrenalin-filled F-4 pilot lit both "burners" and "jinked" left, narrowly missing the preying F-14 by a margin of 1 second and less than 100 feet! The *Tomcat,* finally seeing his not-too-friendly adversary, initiated his own waveoff (probably as a result of sheer terror). At this time, and not before, he informed the tower of his hydraulic problems. The two fighters gathered their wits and made successful individual approaches and landings the second time around. The cliche remained valid once again. It was calculated that the two fighters had no more than 100 feet vertical separation upon first sighting, and only 60-75 feet vertical separation, with no horizontal separation, at closest point of approach. The

AS A MILE

THIS cliche may ring true in many, many cases, but does it have to be the answer as to why midairs don't happen any more than they do? If everyone on the aircrew/air control team does their part as expected, then maybe we in aviation won't have to rely on this oft-used saying. The breakdowns in air traffic control, should they occur, often lead to your Tenerifes, San Diegos, and Opa Lockas. Controllers, to date, have a very enviable record in preventing midairs. The pilots themselves have demonstrated some nifty stick, throttle, and rudder work in order to evade the unexpected transient that's trying to occupy the same place at the same time. In today's crowded and sometimes not-too-friendly skies, both the controller and the aircrewman must keep their heads in the "scan" mode and remain vigilant at all times. Even as hard as they may try at times, the near-misses are still with us, as witnessed earlier this year.

aircraft were approximately within 1 second of becoming statistics! That is too close a margin for safety.

The teamwork approach to safety definitely broke down in this case, but, as luck would have it, a catastrophic mishap was averted. The failure of the *Tomcat* crew to visually acquire the landing traffic ahead of them could have been attributed to the fact that they thought they were still 13 miles from the field, or they had their heads in the cockpit, preoccupied with the "emergency" that they did not report. The controlling personnel and the F-14 were confused as to where everyone was in relationship to the other, and the controller did not detect or suspect the F-14's high approach speed and subsequent overtaking situation. The differences in approach speeds and glidepaths of the two aircraft, a heavy traffic load at the airfield with FCLP, IFR/VFR arrival and departures at the time of the incident, and the controller not recognizing the deteriorating situation early enough to prevent the *extremis* situation further added to the confusion.

How do we prevent such occurrences? The recommendations have been heard time and time again, some more often than others. Aircrews and controllers alike: stop, read, and heed these words of wisdom.

- Emergencies must be declared, if a "safety of flight" problem exists, so that traffic controllers can provide the proper and preferred handling.
- Traffic and position reports must contain specific, accurate, and standardized information.
- Pilots should provide controllers with advisory information if the approach is nonstandard.
- Controllers must anticipate abnormal situations developing if normal procedures are deviated from.
- Fess-up and tell it like it is.
- Use good ole common sense and judgment at all times, particularly when all else fails. ◄

"Every time I go to work, I'm kind of expecting a midair collision. The average military pilot probably has one close call, whether he knows it or not, every 2 or 3 months – one that takes, or could take, his breath away. We get used to it, but shouldn't have to, in the air above congested airports." – Adapted from Flight Operations, Jan 79

Get with the NATOPS program

By Maj N. L. McCall, USMC
NAVSAFECEN

AN ENDORSEMENT to the accident included the statement, "It is the prerogative of the commander to require more stringent operating procedures of subordinate commands when, in his opinion, circumstances inherent to specific aircraft communities warrant such action." Few people would disagree. However, it is not generally known that an obligation is incurred when the "more stringent operating procedures" are adopted. Specifically, the submission of a request for a NATOPS waiver.

OPNAVINST 3510.9F says, "If an individual knows a better procedure or if he sees conflict between NATOPS and other doctrine, he is obligated to propose a change to the publication. Units are encouraged to request waivers for NATOPS procedures . . . However, unless specifically waived, compliance with NATOPS procedures is mandatory." In addition, specific model aircraft NATOPS say, "Compliance with the stipulated manual procedures is mandatory . . . Should conflict exist between the training and operating procedures found in this manual and those found in other publications, this manual will govern."

This seems like a small point, especially if the non-NATOPS procedure is more stringent, but let's look at what can happen (as evidenced by the fact that it *did*) when a waiver is not requested.

The NATOPS manual for a particular helicopter requires that recovery from practice autorotations be accomplished at 3 to 5 feet of altitude and 0 to 15 knots airspeed. While using this procedure, a unit experienced several tail strikes due to poor technique. A fix appeared in order, so a recommendation was made to the commander to raise the recovery altitude to 10 feet, vice 3 to 5 feet. When the commander saw this, he established a recovery altitude of 20 feet, and it became SOP. No one questioned it, or ever submitted a NATOPS waiver request. It seemed only reasonable that since 10 feet was safer than 5 feet, 20 feet must be safer than 10. Reasonable, yes – right, no!

Why? The height velocity diagram for dual-engine failure for this helo says to avoid flying above 10 feet with less than 15 knots of airspeed. The procedure which this unit adopted (and used for several years) put the aircraft in the danger zone during every practice autorotation. This fact was not discovered until a mishap board investigated a crash which occurred during a practice autorotation. If a NATOPS waiver request had been submitted, the inherent danger of this procedure may have been brought to light and its adoption prevented or rescinded before an accident occurred.

Although the horse in this story has already gotten away, a review of practices by everyone concerned with flying operations may close the barn door on others. All procedures which contradict NATOPS without being properly waived violate both the letter and spirit – and the entire program suffers. ◄

1978
CNO Safety Award Winners

CNO "Readiness Through Safety" Award
FLEET MARINE FORCE ATLANTIC

NAVAIRLANT

VF-14
VA-46
*VA-35
RVAH-12
VAW-124
VP-10
VS-32
HS-5
VQ-4
VC-2
HC-6

FMFLANT

HMH-461
HML-167
VMA-331
VMFA-115

NAVAIRRESFOR

VF-302
VA-305
VP-93
VC-12
*HC-9
VR-56

4thMAW/MARTC

VMO-4
HMM-764

CNATRA

VT-7
VT-26
VT-27
*VT-10
HT-8

NAVAIRPAC

VF-151
VA-146
VA-115
VAQ-130
VS-29
VP-6
HSL-35
VFP-63
HC-11
VX-5
*VAW-115

FMFPAC

HMM-161
HMM-265
**HML-267
VMFA-531
VMGR-352

Admiral James H. Flatley Award

USS ENTERPRISE	CVN-65/CAW-14
*USS OKINAWA	LPH-3/HMM-165

*Second consecutive year
**Third consecutive year

COMMplacentius

(failuras to communicatus) He's got a lot to say, but no mouth with which to say it.

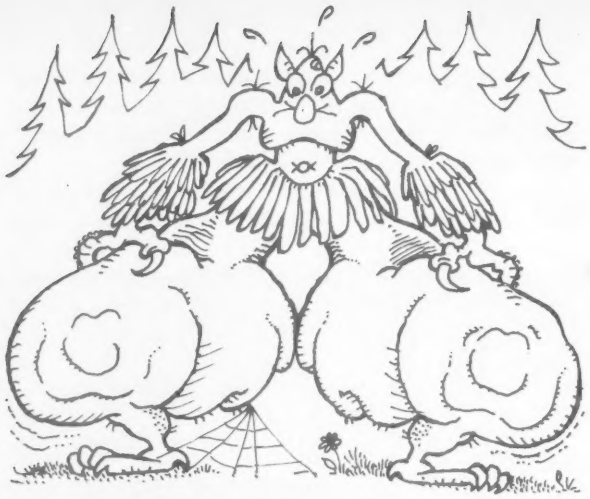
THE MAD MONSTERS

GETHOMEitius

(homingus pigeonus) This hardshelled creature endears you with its warm, house-like facade right up until it hits you between the intakes! It turns up most often after unscheduled delays and just prior to vacations.

ANTIQUAgearius

(preservus deflatus) A prehistoric denizon of the deep and of the steep – he has been known to fly, and may get you if you don't get to him first.



LOOSEboltius

(engine cud quitus) Gone in a flash – but you won't know it until it's too late – you've got to keep a tight rein on them.

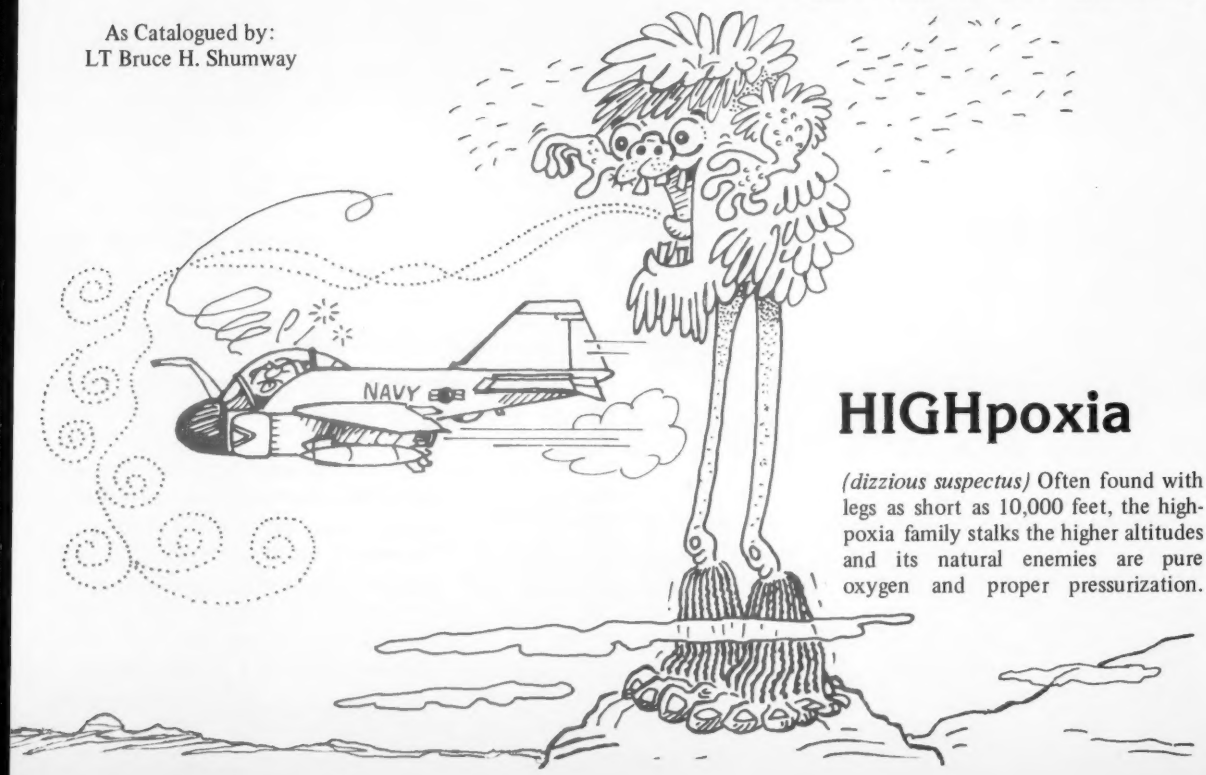
KNEEglectius

(knockus kneesus) Often this monster just creeps up on you. Symptoms: you can't see the forest for the trees or your toes for your knees.

OF THE AIR

Presented by the 'Mad Foxes' of Patron 5

As Catalogued by:
LT Bruce H. Shumway



HIGHpoxia

(dizzious suspectus) Often found with legs as short as 10,000 feet, the high-poxia family stalks the higher altitudes and its natural enemies are pure oxygen and proper pressurization.

SLIGHTLY SPOILED SAILPLANE

THE mission on this clear day was instructor currency in the X-26A. For those that are not up on their aircraft recognition, it's essentially a Schwiezer 2-32 sailplane. And for those that still don't recognize this powerless aircraft, the accompanying photo should do the trick. For those that fly it, most of us are envious. However, research in the *Soaring Handbook* clearly states that sailplanes can do nearly everything that a powered plane can do – including kill you! The pilots of this X-26A were fortunate only to have gotten roughed up a little, by inadvertently "spoiling" their day and landing a bit short.

The front seat occupant of the sailplane was a reserve pilot, TAD to the host air station's SAR unit. The rear seat pilot was an active duty type who was a qualified instructor pilot in the X-26A. The takeoff, climbout, release, and maneuvering prior to entering the downwind for landing were normal. With the front seat pilot at the controls, the sailplane entered the downwind abeam the runway, 300 feet high and approximately 20 knots slow. The instructor pilot noted the error, and the front seater increased the airspeed to 55 knots (existing conditions dictated the correct airspeed be 68 knots). Approaching the 180, the IP noted the altitude to be 100-200 feet high and discussed the use of one-half spoilers in the normal pattern. The PUI then extended three-quarter spoilers, which the IP felt was appropriate for the present position in the pattern. Altitude was slightly high and the airspeed was slightly slow at the 180, but not that bad.

The base and final turns appeared normal to the IP, with the exception of an angling final caused when the PUI misjudged the glider's turn radius. The angling final continued with the IP noting that the nose attitude was proper for a touchdown point near the end of the 5000-foot hard-surfaced runway. At the point where the nose should have been coming up for the flare, the IP noticed the nose to rise but the sink rate to increase! An instinctive glance out the "window" revealed that the spoilers were in the *full-out* position! The IP grabbed the stick and simultaneously pushed forward on the spoiler handle. Not quite responsive enough, however. The glider ceased to glide and touched down on the nosewheel and tailwheel, after a left yaw, and continued in a left ground loop, coming to rest less than 100 feet short of the runway, somewhat askew of the prescribed heading.

The PUI erred in that he allowed the airspeed to decrease to a point where a high sink rate developed. This, coupled with the IP's failure to recognize the deteriorating situation soon enough to retract the spoilers, caused the sailplane to land hard and short of the runway. It may have helped if the glider's radio had been turned on to get a more accurate account of the winds for proper pattern and airspeed compensation. But, all these factors just compounded the IP's apparent act of complacency. He did not recognize the combined effects of a poor pattern, slow airspeed, and deployment of full spoilers until a hard landing was inevitable. Seemingly simple tasks often invite complacency, and complacency often invites disaster – even in unpowered flight. ◄

Although the article below was originally written for corporate aviators, the author has several points that are equally pertinent to all naval aviators. Too many naval aviators and aircrewmen perceive themselves to be separated from aircraft maintenance efforts, and end up creating some of their own inflight emergencies. – Ed.

PILOT/MECHANIC COMMUNICATION

By Raoul Castro
Manager, Marcor Flight Operations

ESTABLISHING programs, policies, and procedures for aircraft maintenance is an extremely important responsibility, since there is a direct effect on the safety of passengers and crew, as well as on the successful completion of the aircraft operation. Yet two of the most fundamental procedures in any flight department – observation and communication – are sometimes performed so poorly that maintenance money is squandered and safety is compromised. The fault is probably one of attitude. That is, the pilot takes certain aspects of maintenance for granted and

some items are overlooked. To help avoid this, the pilot should always remember that he is an integral part of the maintenance team.

Pilot maintenance action includes such duties and responsibilities as preflight, fueling, minimum equipment list, maintenance deferred items, no-go items, and any other action that may involve the crew in any phase of airplane inspection and/or testing, short of actual repair itself. Maintenance communication is the interaction of pilot with mechanic and/or technician to properly explain and clarify any malfunction or irregularity of airplane performance. It is essential.

Preflight action is the final inspection of the aircraft in preparation for flight. It must be performed thoroughly and methodically, which requires a conscious awareness of and attention to the checklist procedure. If the preflight becomes too mechanical, complacency can set in, resulting in some items being overlooked because they are usually correct. A case in point might be the occasion when an airplane has been handled by the maintenance crew. Circuit breakers may be out, switches off, and the whole plane in complete functional disarray. The preflight checklist should be detailed and thoroughly performed to take care of such contingencies.

Fueling is another preflight action. How many operators require one of their employees to stand by while the airplane is being fueled? I know of numerous incidents where aircraft have been damaged in the fueling process. Safety valves did not operate, hoses were thrown over the wing, fuel caps were loose, trucks backed into airplanes, the wrong type of fuel was pumped into the tanks, and improper amounts of fuel were delivered – Murphy's Law on the rampage.

The gripe sheet. The postflight or debriefing report – the gripe sheet – is just as important as the preflight from the standpoint of cost and, more importantly, safety. Bill Davis of Piedmont tells of the pilot who wrote this gripe, "Number one transceiver A.P.O.N." When the mechanic called the pilot for an explanation, he learned that the abbreviation stood for, "Ain't putting out nothing." How obvious.

Pilots have a knack for brevity when writing irregularity

reports or gripes, assuming that the mechanic can look into a crystal ball and interpret the scribblings. Well, sometimes he can't, and hours are wasted looking for the trouble without knowing what the real problem is. Much time and money is spent, and the malfunction goes uncorrected, despite the outlay of resources. It's no wonder that, after fuel, maintenance is the largest operating expenditure for aircraft.

Without a doubt, a high percentage of the misconceptions, frustrations, and inefficiencies in our working relations with mechanics is attributable to poor communications. In almost every case of lost labor, wrong part replacement, and improper repair, you will find that somewhere along the line there was a breakdown of communication.

When writing a gripe or discrepancy report, you should always answer the following questions: What? When? Compared to what? and Under what circumstances? Let's look at two actual gripes and see how they fail to answer these questions.

- "Fuel gages erratic."

What fuel gage? Left, right, auxiliary?
When? While being fueled? While taxiing?
Where? In the air? On the ground?
Compared to what? Left higher than right?
Under what circumstances? (If available.)

- "Left EGT high."

What? Amount above normal.
Where? Ground or air?
When? Starting, takeoff, climb or cruise?
Compared to what? Other engine gage?
Under what circumstances? Fuel flow, percentage of power, or EPR.

Good communications with maintenance is extremely important. The ideal procedure is for pilots to have a debriefing session with maintenance personnel. If this is not possible, a good write-up is imperative. The proper forms are an absolute necessity.

Critical 11 minutes. Following the forms faithfully and completely will assure that all systems are operative when you need them. And the demands on the various aircraft systems are never greater than during takeoff and landing – two periods when you definitely don't want any surprises.

TWA has called this period of greatest potential exposure to hazard the "critical 11 minutes." It includes the 3 minutes after takeoff and the 8 minutes prior to landing, and the airline safety program *stresses* crew awareness during this time.

Let's look at what happens to the airplane system in these 11 minutes. This is the only span of time during which all systems are operated and tested.

- Hydraulic system – gear up or down, flaps up or down, gear doors opening and closing. All adjustments and pressures have to be correct.
- Electrical system – electrohydraulic switches operated, warning and pressure lights, landing lights, generators, and voltage regulators. The entire electrical system must be working at peak performance.
- Pressurization and air-conditioning system – starting and ending the full cycle of keeping the airplane environmentally sound.

Ponder, if you will, the multitude of functions that occur during this 11 minutes and then reflect as to whether the preflight and postflight reports were done correctly. Remember, in cruise at altitude, the systems are idling and operating at minimum requirements. The "critical 11 minutes" is the time when all systems function, and they should function correctly.

A pilot's ability is tested in an emergency, and insurance industry statisticians claim that a good percentage of emergencies are caused by mechanical malfunctions. Proper preflight and postflight action and good pilot/mechanic communication can go a long way towards making emergencies something for which you prepare, but in which you never participate.

Reprinted from *PROFESSIONAL PILOT*

The three "A's"

By LCDR D. L. Morrissey, USCG

Dear Oldtimers,

I'm talking to all you salty old aces who: 1)push a lot of paper all day; 2) are still considered operational pilots; 3) fly on the average of 10 or 15 hours a month; and 4) have all that incredible background and experience. Examine, if you will, the person you present to the command as well as to the nuggets arriving from flight school. Let's just call this image the three "A's" – Apparel, Attitude, and Action.

Apparel. Here is my mode of dress for a standard duty day. First, my flight suit. My flight suits, all six, seem to have the same problems. When they were tailored in 1963, the designers obviously didn't concern themselves with quality. Half of my zippers no longer work, the knees are beginning to wear thin, and they have ring-around-the-collar. I don't even have to put them on hangers anymore; I just stand them up in my locker when I'm through. One good thing, though, is that they're ORANGE. Not like the pickle suits the bubble-gummers are wearing now, no siree. To cover my flight suit, I don my "cool" flight jacket, adorned by a myriad of legal and extra-legal patches from everywhere I've been. Boy, do the bubble-gummers drool. They think the name tag you can no longer read and the ripped cuffs are great. Completing the package are my baseball cap (from three stations ago – once blue) and my brown flying boots. Remember brown? They've been resoled four times. The insides wore out in 1972, and they give me blisters, but I'll be buried in them. I even have a pair of yellow, leather, sheepskin gauntlets that I drag out every once in awhile for those who care.

Attitude. Pay close attention, now. The categories get more difficult as we progress, and I ask questions later. Do you notice a growing nonchalance about doing the aviation things you've been doing for years? Search and Rescue is a good example. SAR is just as exciting as it was when you were Elmer Stone's copilot. (*Elmer Stone is a famous, old, Coast Guard pilot.*) But anymore, getting up in the middle of the night and driving 100 miles offshore, or hovering on a mountainside in freezing rain just doesn't hold the glamour it once did. You've done it all before, and you've done it well. And, the last time this happened, we looked for 5 days and didn't find a thing, despite our best efforts. Disheartening, isn't it?

Another thing that bugs me is that years ago we didn't have all the fancy equipment and procedures we have now. It's gotten so that it's almost too difficult to fly anymore. Autotrack LORAN, INS, HU25A. Who needs it! Give me my drift meter and my voice position reports and I'm happy. But I'm not so parochial that I can't see the trends. The bubble-gummers

know this stuff. The command is interested, and headquarters is spending a lot of time and money researching, developing, and procuring, and if you and I don't watch out, we're going to be left behind before we can even figure out how to file a flight plan.

Action. This is where it all comes together. We wear our faded flight suits, and we put our feet up on the desk as we reminisce about the way it used to be, and that's OK because we can still put out when the situation dictates, right? After all, I'm the head of the Examining Board, the Stan Board, etc.; a veritable fount of knowledge and experience. Whenever my august cohorts and I gather to discuss procedures, the office is hushed in well-deserved respect. And yet, the fact of the matter is that together, we haven't flown a total of 25 hours this month. What happens to the "fount's" proficiency when he does that? He takes off with the flaps up, or taxies the helo with the wheels up, or does any of a number of other dumb and dangerous things. It's not that we aren't good anymore, it's just that we never get a chance to practice.

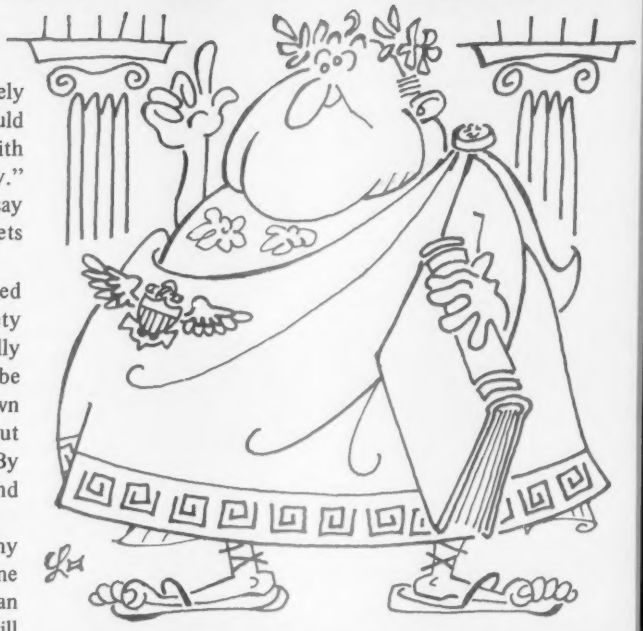
So, your position has changed. You're an upper-middle manager and certainly carry your weight at the unit in terms of volume of work accomplished. At the same time, you find yourself in the very dangerous dichotomy of advisor to the commanding officer on matters related to flying, and you just don't get around much anymore. This is a serious problem and is one which the command can do little to change. The paperwork is always there, along with all the other demands on your time. But I've found myself behind the eight ball a couple of times lately, in the cockpit, and I didn't like it one bit. If you or I crunch one because we relied on our experience to pull us through, that won't cut it. Actions do speak louder than anything, particularly excuses.

The point, then, is this. Our values have shifted, as we respond to differing demands for our services. The draw of the flight deck diminishes proportionately to the burden of our administrative duties. Conversely, the impact of what we say on aviation matters grows larger the longer we stick around. It is incumbent on each of us, therefore, that we fight the good fight to stay proficient, and keep the good outlook so that what we say and what we do in flying is just as right now as it was back when we were Elmer Stone's copilots.

So, maybe all of this can be rolled into one final "A" – Awareness. Awareness of our responsibilities to our flight deck as well as to our desk. Awareness of our commitment to ourselves as professionals. Awareness of the image we project to those around us. We have these responsibilities, and they're just as important as they were years ago. The job has just become more demanding.

The laws of naval aviation

By LCDR Carroll R. Beeler, USN
VF-151 ASO



DID you ever have one of those days when absolutely nothing went right? Searching for the reasons, you could never really figure out why. Some of us come up with various excuses such as, "They told me to do it this way." Some call it "fate" or "the breaks of naval air." Some say "That's life" or "When the tough get going, the going gets tough," etc. Of course, the cliches go on and on.

I think a personal review of the rules and laws presented will be entertaining and useful, in an obtuse manner. Safety officers or anyone else can take these laws and place locally derived names in front of them. It doesn't have to be Murphy, O'Toole, or the CO. Place one of your own names in front of the law. This list is designed to be cut out and reproduced at will (there is no copyright charge!). By all means, feel free to add or subtract from the rules and tailor them to fit your area.

We've all heard of Murphy. No one remembers Murphy personally, nor does anyone really care, but everyone knows the ramifications of Murphy's law: that is, if an aircraft part can be improperly installed, someone will install it that way. A few of the following rules and laws govern a lot of the activities in naval aviation. Some are general; some are specific.

Murphy's Law: If an aircraft part can be improperly installed, someone will install it that way.

O'Toole's commentary on Murphy's Law: Murphy was an optimist.

The Unspeakable Law: As soon as you mention something, if it's good, it goes away; if it's bad, it happens.

Nonreciprocal Laws of Expectations: Negative expectations yield negative results. Positive expectations yield negative results.

The Skipper's Law: Every man has a scheme that will not work.

The Supply Dept's First Law of Evolving Systems Dynamics: Once you open a can of worms, the only way to recan them is to buy a larger can. Be advised – the larger can is N.I.S.

Sailor's Observation: The other line always moves faster.

The Executive Officer's Constant (formerly Flannagan's Finagling Factor): That quantity which when multiplied by, divided by, added to, or subtracted from the answer you get, gives you the answer you should have had to begin with (think about this one).

The Law of Selective Gravity: An object will fall so as to do the most damage or cause the most embarrassment.

Jenning's Corollary: The chance of the bread falling with the buttered side down is directly proportional to the cost of the carpet. (Insert comment regarding uniforms if desired.)

The Maintenance Officer's First Law: If a research project is not worth doing, it is not worth doing well. ("Give me a memo on it.")

NATOPS First Law: If the facts do not conform to the theory, they must be disposed of.

Hoare's Law of Larger Problems: Inside every large problem is a small problem struggling to get out. (This has nothing to do with liberty in a foreign port.)

Water's First Law: When in doubt, mumble.

The Golden Rule of Arts and Sciences: Whoever has the gold makes the rules.

The P-K Distinction: There are two types of people: those who divide people into two types, and those who don't.

Giles Law: A man with one watch knows what time it is. A man with two watches is never sure.

Ninety Percent Rule of Maintenance Repair Schedules: The first 90 percent of the repair takes 90 percent of the time, and the last 10 percent takes the other 90 percent.

Operations Fourth Law: Necessity and the schedule is the mother of strange wingmen. (Safety can be added here as well!)

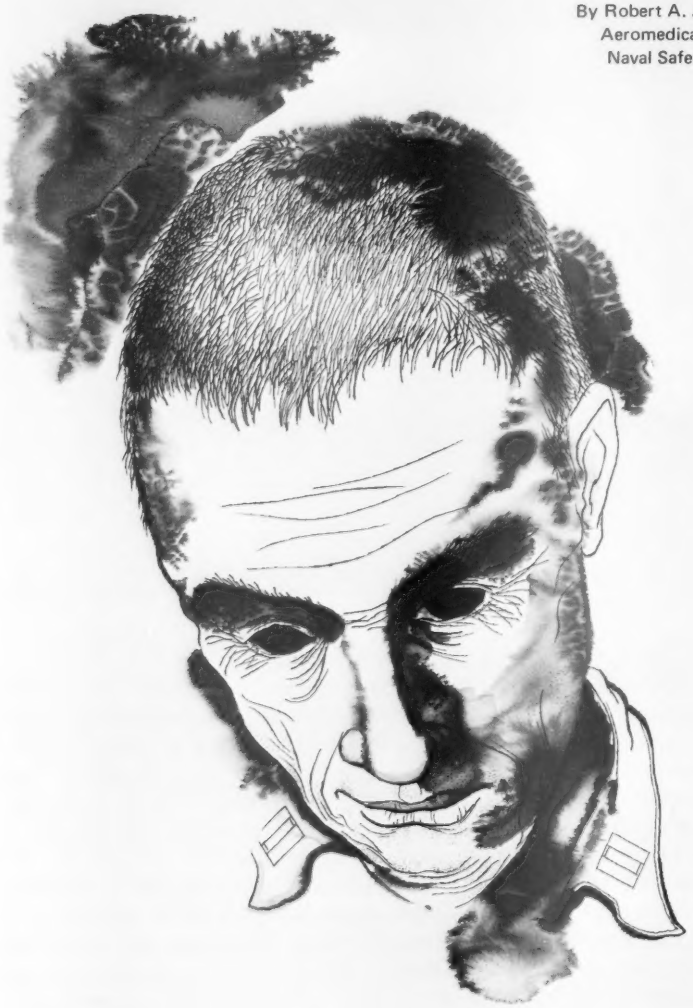
Landing System of the Future

WITH the Washington Monument in the background, test pilots of the FAA's NAFEC (National Aviation Facilities Experimental Center), located near Atlantic City, NJ, fly the first checkout at Washington National Airport of a version of the world's newest all-weather, precision landing system. Called the Microwave Landing System, it has been installed temporarily at Washington National for performance tests that will lead to certification during the 1980s by the Federal Aviation Administration. The new U.S.-Australian-developed system was approved by international aviation authorities last year as the standard for future use at airports around the world. It is capable of landing planes both on curved approaches, lessening noise over densely populated areas, and faster than the Instrument Landing System now in use. To obtain comprehensive data on the new system's operating performance, special permission was temporarily obtained to fly in restricted airspace over the White House so that certain landing approaches into Washington National could be made.

Courtesy Public Affairs Office
FAA/NAFEC

STRESS
and the Naval Aviator

By Robert A. Alkov, Ph. D.
Aeromedical Division
Naval Safety Center



ACCORDING to Dr. Hans Selye, the famous originator of the concept of stress and the body's reaction to it, stress is the stereotyped part of the body's response to any demand. Psychological stress comes about due to nervous tension caused by family problems, financial worries, work-related frustrations, and conflicts. Physiological stress is imposed by strenuous activity such as muscular work. It can be provoked by physical injury, disease, hunger, and other environmental factors such as cold or heat. These stresses bring about an increase in the wear and tear on the body that accompanies any activity, leading to fatigue.

The body attempts to cope with stressors through a defense mechanism that Dr. Selye calls the general adaptation syndrome. This syndrome evolves in three stages: (1) the "alarm reaction" during which defensive forces are mobilized; (2) the "resistance stage" in which the body fully adapts to the stressor; and (3) "exhaustion" which comes about if the stressor is severe enough or lasts long enough to negate the body's coping mechanisms.

In other words, during the first stage of coping with a disease or extreme fatigue or any psychological or physical shock, the body reacts by releasing certain chemicals in the blood to enable it to combat the infection, to overcome the effects of fatigue, and to handle the shock. During the second stage, the body is adapted and coping with the disease or shock. If the stressor persists, the body's coping systems may become overloaded and enter the third stage – exhaustion.

So, it seems that the body's coping mechanisms or defenses are finite and, while varying from individual to individual, may collapse if employed for too long or faced with too much stress.

Everyone has a different level of stress tolerance. Experience in coping with psychological problems, which comes about through maturity, may increase the individual's capacity for handling this kind of stress. Youth and physical conditioning, on the other hand, may enable a person to overcome fatigue or illness more quickly. If we think of stress coping as the ability to juggle balls, we can see that a master juggler can keep a large number of balls in the air at one time without dropping any, while an amateur may only be able to handle a couple of balls. The addition of one more ball to the master juggler's balls, when he has reached his coping limit, could cause him to drop all of the balls. Adding one more to the amateur's couple of balls could also cause him to lose them all.

This means that each individual is capable of handling different amounts and kinds of stress. However, everyone has his limits. We cannot, therefore, treat everyone alike and aim for a typical level of stress that people can cope with before breaking down. For example, in scheduling aircrews for hazardous missions, we must know something about the aircrewmember involved before we make judgments about how well he will perform under stress. He must be observed performing under stress. Even then we must realize that this ability to cope may change with such factors as personal problems, colds, headaches, or fatigue.

Of course, some stress is necessary in order for the individual to remain alert and vigilant. Without stress, boredom and complacency take their toll on performance. However, there is probably some optimum level of stress which is required for maximum performance. Many people perform better under stress of deadlines, etc. But, if the stress is of too threatening a nature or persists too long, behavior can break down and costly errors and accidents may result.

Aviators should be aware of the insidious nature of psychological stress and be encouraged to seek help when required. All too often, however, aviators refuse to admit to having emotional problems because of fear of peer pressure, loss of flight pay, or jeopardizing their careers. Many have a false idea that having emotional problems is "sissy" or that someone will think them weak for admitting to such problems. The "macho" image of most aviators is violated by signs of weakness, so they have learned to cover up their emotions and feelings in order to live up to this image.

Realistically, most people are unable to be objective about their own mental state, and aviators are especially defensive about any factor that threatens their flying ability. However, when convinced that they are medically not *fit to fly* a particular mission, there is no problem. After all, a runny nose, fever, flushed face, or cold sweat is evident for all the world to verify. What is difficult is to admit to one's self, and to convince others, that personal problems can render an individual medically unfit to fly when there are no outward signs of illness. There is a false impression that the aviator's *ability to fly* is in question rather than his *fitness to fly*.

We can't reasonably expect aviators to become amateur psychologists and start self-analysis but, hopefully, the mature aviator has enough self-awareness or self-knowledge to know when he is in trouble and when to seek help. There should be no qualms about discussing personal or emotional problems with a flight surgeon, in order to seek guidance.

Squadron safety standdowns should provide a forum for discussing stress, the danger signs of emotional problems, and how to cope with them. Aviators should be instructed

to contact a flight surgeon if they suspect a fellow aviator's *fitness to fly* is being affected. Symptoms can be discussed and a consultation arranged, if warranted. The individual might be counseled to arrange for the appointment himself. Sincere concern for a fellow aviator's health and accident potential should not be construed as snooping into someone else's business, but should be viewed as an act of kindness. More importantly, lack of *fitness to fly* because of personal problems should not be viewed as a stigma by aviators or their commands. The old can-do spirit is misleading in this situation since, even if it does not result in an accident, it can be detrimental to mission performance.

The work done on life changes and stress by CAPT Richard Rahe, MC, USN, Head of the Naval Health Research Center in San Diego, California, reported in APPROACH magazine in February of 1975, showed that there was a relationship between life changes and health changes. The arbitrary point system which he set up for his study revealed a correlation between total points and adverse health reactions, regardless of whether the change was considered beneficial or detrimental to the individual. The important factor was change. Any sort of change apparently imposes stresses on the body's coping mechanisms.

We at the Naval Safety Center attempted to relate these life change factors to performance (i.e., aircraft accidents) within aviation. Studies elsewhere revealed that the individual most likely to be affected was the younger, less mature, less experienced, less educated enlisted man from a lower socioeconomic family background. This seemed to preclude the typical naval aviator who is usually a college graduate. However, a preliminary questionnaire analysis has revealed a tenuous relationship between pilots and other officer aircrewmembers, who were causally involved in aircraft mishaps, and such life stressors as a birth in the family, a death in the family, the death of a close friend, or a major decision regarding the future. In other words, individuals with any one of these life change factors were more likely to be involved in a pilot error accident than in a nonpilot factor accident.

Further research into these and other factors is needed, but the important fact to evolve from these studies is not the quantitative value of life change units, but the quality and nature of the life event and the ability of the individual to cope with it.

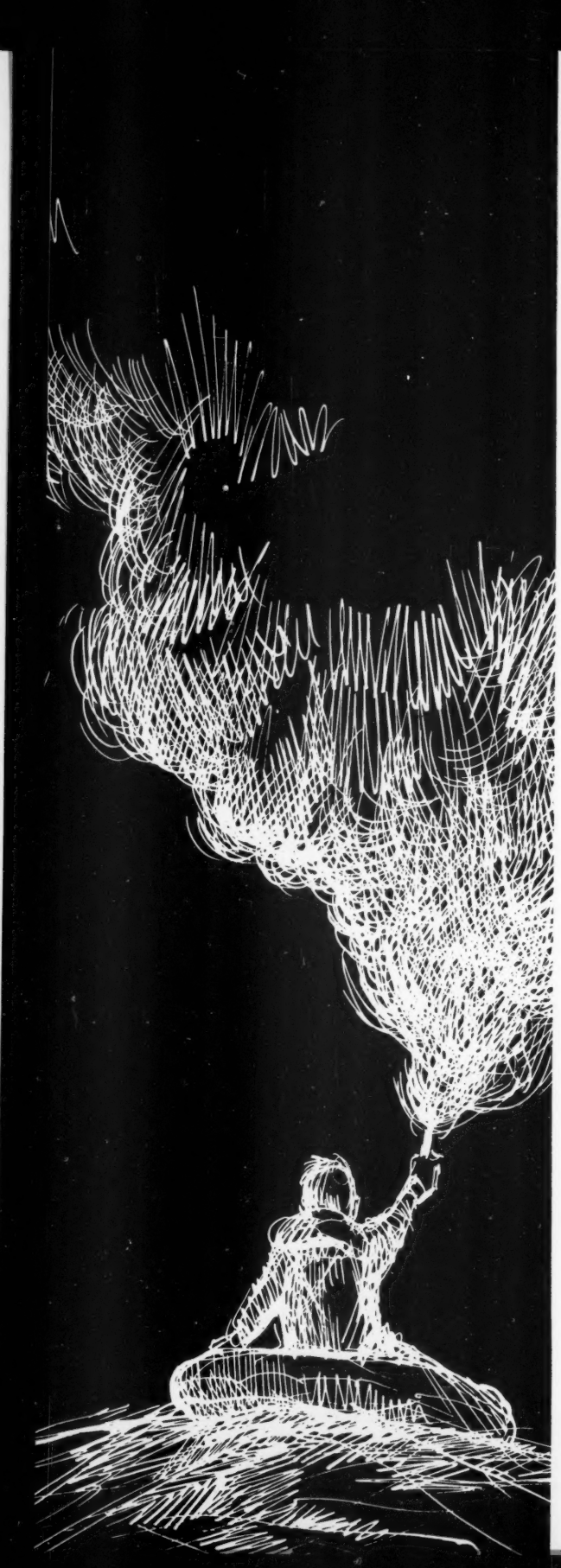
Dr. Rahe believes we can go a long way toward combating stress through physical fitness. A program of exercise, diet, and adequate rest should put the airman into shape to handle moderate stress when it appears.

Individuals who are undergoing significant life events should be scheduled for flying missions with regard to stress factors such as fatigue, missed meals, colds, environmental factors such as weather, night, type of mission, etc., and the knowledge of the individual's ability to cope with the particular stress he must face. With this knowledge and adequate coordination with the flight surgeon, decision-makers in operations should hopefully be able to impact the pilot factor accident rate in a favorable manner.

Now hear this!

The following is reprinted from a message from COMNAVAIRPAC to ALNAVAIRPAC. It stresses a point which cannot be overemphasized to anyone in naval aviation. – Ed.

GREY GHOST. Discussions with PCOs and PXOs revealed some reluctance toward honest and forthright incident/accident reporting. The concern appears to be that a command might put itself on report, appear negligent in its procedures, or look dumb. Let's set the record clear! The fact that you had the accident may precipitate a close look at your operation, but the only real problems come from not telling it like it is. The greatest value of the burdensome paperwork associated with accidents/incidents is to isolate problem areas and to inform others so they may profit from your mistakes. A perfect example of explicit reporting with your pants falling down came when a VP OINC told of the poor crew coordination that almost caused a P-3 to fly into a mountain. The entire crew owed their lives to an alert air controller on the ground, who vectored them clear of the mountain. The OINC was publicly praised for his honest account, and the air controller was named air controller of the year. Positive results for all concerned. In a very real sense, we all are being paid to stand up and be counted.



NATOPS Manuals

A Help or a Hindrance?

By LT Michael G. Thomas
NAVSAFECEN LAMPS Analyst

HOW well does your NATOPS Flight Manual fulfill its intended purpose? Ask yourself the following about your book:

- Are the systems' descriptions verbatim from the MIM, including diagrams that look like mazes?
- Do your operating procedures set artificial restrictions which decrease the aircraft's design capabilities, and dictate pilot technique?
- Are the warnings, cautions, and notes more of a feeble attempt to protect against poor judgment than actual honest precautionary statements of fact?
- Are the performance charts constructed in such a manner that a cryptologist given a year might be able to decode them?
- Do the emergency procedures ramble?
- Do the emergency procedure steps follow a sequence that seems to indicate that they were drawn from a hat?
- Does your manual contain information rightly belonging in associated tactical manuals?
- Is the manual infrequently used or read by pilots and/or aircrew?
- Do aircrews frequently criticize the manual?
- In your mind, as the user, does the manual fail to adequately live up to the intended scope as stated in the manual's very first pages?

If your answers were mainly negative, then your manual is in good shape. If not, perhaps some constructive change is in order.

If you have read this far, you have probably formed some opinions about your manual – both good and bad. You have either identified with the criticisms or successfully defended your manual. Either way, you will have fulfilled the intent of this article – to get you to look upon your manual as a helpful tool or to change it when there are good and sound reasons to do so, and to reiterate that NATOPS manuals are no substitute for sound, competent judgment. If changes are in order, submit the recommendations yourself. Don't wait for the "other guy" to do it. After all, what good is a manual that hinders more than it helps? ◄

Letters

Energy Management

NATC, Pax River – Your article, "He Let It Get Away" in the FEB '79 issue was an excellent presentation of your final conclusion, "Safety of flight is far more important than completing any practice maneuver." That approach to safety during training evolutions is applicable to all aircraft, not just helicopters.

An additional item that I think could have been addressed in your article as a result of that accident is energy management during autorotations. Energy management is more commonly associated with the fighter community and not directly addressed by the helicopter community as often.

While the height-velocity diagram is intended as a guide to minimum safe altitude and airspeed required for a safe touchdown following a sudden engine failure, and a 2-second delay for pilot reaction, it is really a guide to the total energy of the helicopter. The total energy of the helicopter is composed of the kinetic energy of the helicopter airspeed and main rotor RPM, and the potential energy of the helicopter altitude. The deeper into the avoid area a helicopter is flown, whether in powered flight or autorotation, the less total energy will be available to complete a successful touchdown autorotation. The other standard autorotational considerations of density altitude, gross weight, wind, balanced flight, and maneuvering can offset any margin that is present.

H-1E/K/L NATOPS minimum rate of descent airspeed is 65 KIAS and, in the accident described, the aircraft was at 45 KIAS at 100 feet. Additionally, NATOPS recommends that zero groundspeed autorotations be avoided except in actual emergencies.

When the contractor and the test center evaluate a helicopter and make warnings or recommendations on autorotation touchdown and airspeeds, many factors such as pitot static system lag, or error, flare attitudes, etc., are the reasons for a minimum rate of descent airspeed, in addition to the actual minimum rate of descent performance. While I strongly endorse teaching maneuvering autorotations, maneuvering outside of NATOPS recommended minimum rate of descent, and maximum range (glide) airspeeds, should be accomplished very carefully and with full knowledge of altitude/airspeed lead times required for safe termination.

Since we all learn from accidents, in addition to the psychological aspects that were presented in your article, the technical aspects of physically being able to complete an autorotation were also important factors in the accident you described.

Capt Stephan A. Hanvey, USMC
Naval Test Pilot School

No NATOPS for Flying Clubs

Seattle, WA – Per your article on pg. 14 of the MAR '79 APPROACH ("Is NATOPS Needed for Navy/Marine Corps Flying Clubs?"), I respond, "Hell no!" Your article did not point to a lack of regulations, but to a single pilot's failure to follow regulations already in effect. I was gratified to note he was fined for the landing and required to pay for the tow from the beach to the local airport. I trust the local club would not allow him in another of their aircraft without a major retraining program. (The FAA should have enough information for a couple of flight violations including the previous no radio touch-and-goes at an airport with an operating tower.)

You should know that he is not typical of the Navy Flying Clubs' average pilot. Most of the members are dedicated general aviation pilots and student pilots who expend a great amount of effort to comply with the rules and regulations. In most cases, the requirements to operate club aircraft are significantly stricter than those established by the FAA, including checkrides and various written aircraft and course rules exams. We are proud of our clubs and enjoy that rare opportunity to safely introduce military people and dependents to the joys of aviation.

The FAA rules and regulations, coupled with the SOP required by OPNAVINST 1710.2B and other local restrictions, are more than sufficient to provide guidance to clubs and their pilots. What is needed is more local interest and supervision by personnel in the Navy with a general aviation background. We do not need station and staff safety officers who have only a naval aviation background and believe it isn't safe for general aviation unless it is done in accordance with NATOPS.

The Safety Center could help improve the club safety program by providing an informal monthly newsletter containing safety items unique to military flying clubs. This newsletter could contain safety and maintenance data to fill a real void in the Navy Flying Clubs. Collectively, we are probably the largest T-34 fleet in the world, and we have no central feedback operating mechanism to inform clubs about how other military clubs are safely solving their T-34 operating problems.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, VA 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

The newsletter is also needed to inform local commanding officers and operations officers on general aviation news. A better informed man in those positions would provide more rational decisions which affect flying clubs. I respect the opinions expressed in your magazine and may have become paranoid over the past few years, but if your magazine can publish an article suggesting it, I am certain some Navy club today is expending considerable effort to justify to an uninformed (on general aviation matters) naval aviator why they shouldn't have a NATOPS for their club. Next, someone will want a NATOPS for all clubs that have objects which fly: the archery club, the golf club, etc. Where will it end . . .?

More regulations are not the answer, but supervision and information will help.

If you should decide to print any portion of this, I request you withhold my name. Although I am speaking from the experience of membership in 12 clubs, someone might take it personally.

COMFAIRWESTPAC Staff Member

• Your point that increased regulation is not necessarily the answer is well taken. However, the lack of a central communication point for flying clubs indicates the need for some thought on overall flying club organization. APPROACH has and will continue to run articles concerning Navy/Marine Corps Flying Club safety, or lack thereof.

Re: "The Other Side of the 'Bag' "

MCAA, NORVA – **Amen** to CDR "Brev" Moore's article in the JUN '79 issue. It's definitely worth the time and effort for every aviator, military and civilian alike, to read and heed.

Having been an instrument instructor in a Marine RAG, and a NATOPS instructor in both jet and recip aircraft for many years, not to mention being a scope dope (GCA type), I personally share and appreciate the author's views. I'm sure that the majority agree with CDR Moore, particularly in today's positively controlled skies. Radar environment is great, but take a trip to the Orient or the Med, and, if you are not up to speed on all the procedures that the author talks about, you'll become a believer real fast. Try a dual-ADF approach to mins into the International Airport at Taipei in a C-117, with a jet jock/helo driver copilot who has but 50 hours in-type (yet NATOPS qualed), then be faced with a MAP into that mountainous valley ahead!

Flying in the confines of the USA is really a treat, but don't forget, all pilots don't remain here for their entire tour(s). So, it behooves everyone, instructors and "students" of instrument flying, to practice those areas that CDR Moore has broached. And if you think that military pilots are "rusty" at times, just jump into a light civilian airplane one of these days, as I did, and really get a look/feel for "rust"! We all need to stay up on the correct and safe procedures – and that's only done through practice.

J. T. Toade, USMC (Ret.)

More On C-2 Cargo Load Shift

NAF Sigonella – In the MAY '79 APPROACH, a letter appeared regarding a load shift in a C-2 ("Re: 'Cargo Load Shift' ") written by "Anonymous Cargo Handlers" of NAF Sigonella. VR-24 is the only unit which operates the C-2 in and out of Sigonella, and this incident is still very fresh in the minds of the squadron's COD flightcrews.

The concern of NAF Sigonella's cargo handlers is most welcome and appreciated; however, in this case the authors had certain misconceptions that should be clarified. It is obvious that, in the opinion of these authors, the cargo shift was due to poor loading technique, and it also appears that this opinion was based on observations developed prior to completion of the formal investigation. In order to bring out the facts and to point out a hazard which could have an effect on all COD flights, I would like to share some of the discoveries which this command made in regard to this particular incident.

After the C-2 landed at Sigonella, it was determined that four cruise boxes (combined weight approximately 500 pounds) had shifted approximately 18 inches aft in the cargo cage, thereby compressing the top two-thirds of a box which had buttressed the cruise boxes. Since no turbulence or flight difficulties had been encountered, it is presumed the cargo shift occurred during the cat shot. The box which was compressed weighed 625 pounds and had been loaded aft, next to the stanchion, due to the heavier weight and the impending cat shot.

The C-2 NATOPS had been fully complied with in loading, and the load master's decision to load the heavier box aft for the cat shot was proper and logical. In spite of this, undue potential for a mishap was present and was found to be inadequately covered by packing instructions for air cargo. The culprit in this incident was the composition of the container which permitted the load shift. The box was of a tri-wall cardboard structure, and, upon opening the compressed container, it was discovered that over 50 percent of the volume in the box was bubble wrap and other packing material. The mass contained in the compressed box was concentrated in its center, and there was nothing to prevent the box from crushing.

It is imperative that all COD flightcrews be cognizant of this hazard and that a set of special packing restrictions for COD aircraft cargo be developed to alleviate future occurrences of this nature.

LCDR R. S. Boyle
VR-24 Safety Officer

• Thank you for clearing up the misconceptions in the original letter. We hope your letter will make all cargo handlers and packers more aware of this hazard.

Also Too Hot?

Louisa, VA – While reading about the new thrust vectored ejection seat concept ("A Safer Way to Eject at Low Altitudes," AUG '77), I am reminded of an article which appeared back in MAY '76 on pg. 18 ("Too Late, Too Hot to Survive"). It concerned low altitude ejection fatalities which resulted when a properly functioning escape system placed the pilot in or over the aircraft impact fireball.

If this new gimbaled rocket motor seat were to be employed close to its lower limit (say inverted at 100 feet AGL), would this system not also place the pilot in or over the fireball? Could this seat be programmed to fire horizontally until safely clear of the probable fireball area?

Clyde L. Koral

• The design function of the subject seat is to increase the probability of aircrew survival during ejection under adverse conditions. When operational, this system has the potential to reduce the out of envelope ejection fatalities by 70 to 85 percent. The probability of the occurrence of an ejection fatality due to fireball with this system will be less than it is now (which is quite rare). The key is to get the system to seek the vertical as quickly as possible. Programming the seat for extended horizontal flight would introduce far more potential risks to the survivor, thus negating its value for the sake of preventing an otherwise rare event. ◄

RESTRICTED AIRSPACE

Safety Umbrella or Invitation to Disaster?

By LCDR Barry F. Schwoerer, USN
VS-38 ASO

FLEET aircrews routinely brief flights that utilize restricted airspace for gunnery, bomb/rocket delivery, ACM, aerobatics, and ASW training, to name but a few. Checking "hot areas" prior to launch, to keep clear of the "other guy," is SOP for professional aircrewmen. Military crews quickly become orientated to the "hot area" syndrome and begin to assume that, when it's *theirs, they* may operate with immunity.

This assumption can be hazardous to your health – not to mention extremely hazardous to the unauthorized and unwanted "intruder(s)"! Restricted areas are valid only if *all* pilots flying in the proximity of the "hot area": (1) are aware that the area exists; (2) are aware that it's "hot"; (3) have navigated correctly; or, (4) care that it's there and/or "hot" in the first place! A breakdown in any of the above could very well mean an unauthorized or unwanted "intruder" in *your* "hot area" when least expected.

The hazards of "intruders" are particularly high in certain parts of the United States where there are many uncontrolled aerodromes in the proximity of restricted areas used for military training flights. These uncontrolled aerodromes, by virtue of being uncontrolled, often lead to unprofessional flight operations. For example: flying without applicable area charts; flying direct routes through the restricted area to save gas and time; not checking the complete NOTAM file; not communicating with either Center or FSS (Flight Service Station); or any combination of the above – definitely not the professionals' approach to safe flight.

A case in point emphasizes the need for vigilance while operating in *your* restricted airspace. In February of '79, a west coast VS squadron scheduled and flew a rocket delivery flight on a target in a restricted area near the Imperial Valley in California. During the S-3's live firing run, a civilian Cessna overflew the target centerline as the *Viking* was passing 7000 feet in a 30-degree dive! Fortunately for the light "puddle-jumper," the rocket run was aborted prior to the release of rockets. FSS reported that the "intruder" did not contact them for clearance through the area as required by FARs (Federal Aviation Regulations). Radio communications were not held with the "intruder" on VHF frequencies (including Guard) in use by the resident FSS and Center agencies. In this case, three of the four aerodromes within 20 miles of the restricted area's target were *uncontrolled*!

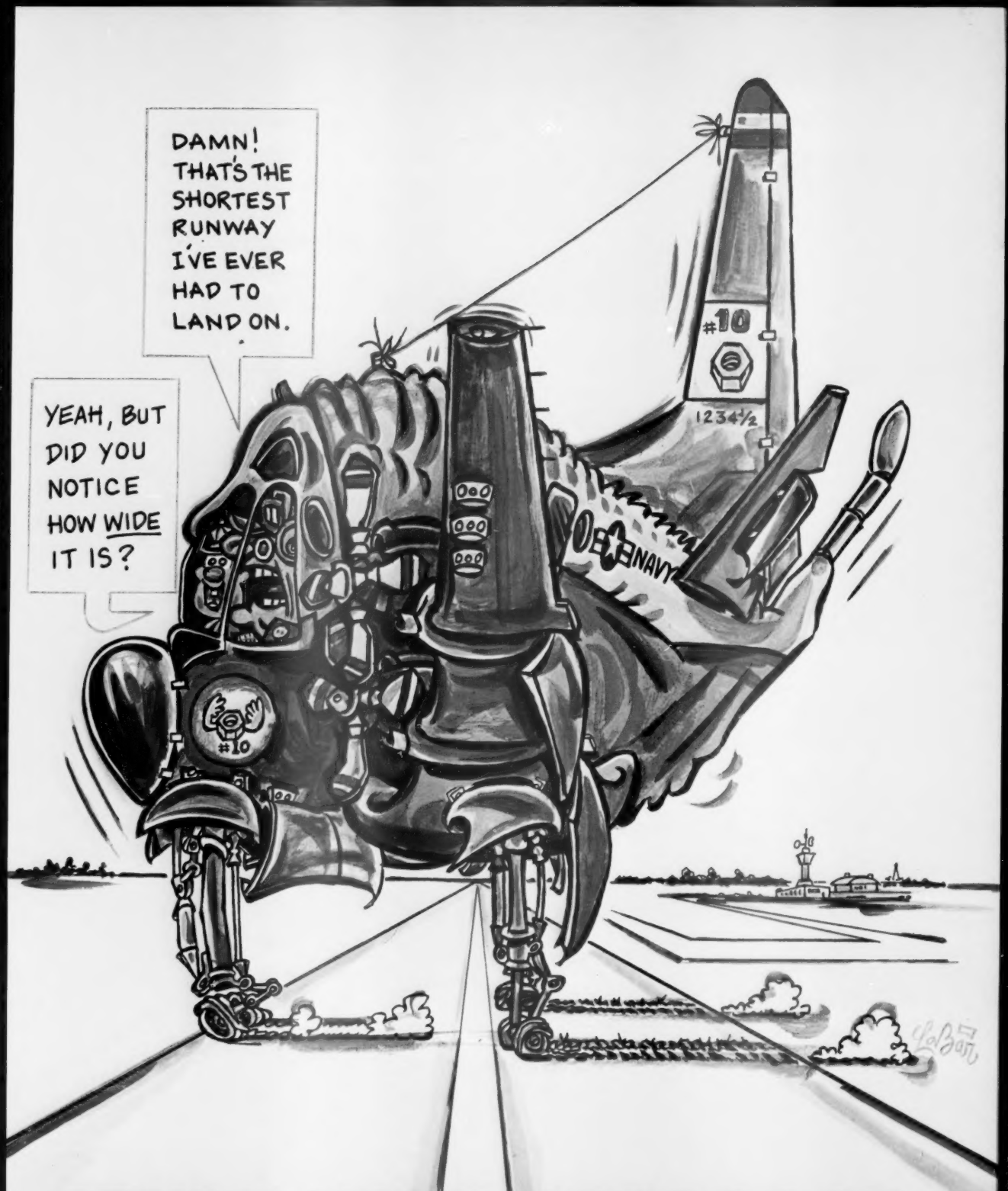
The lesson to be learned from this near-miss (plane/plane and plane/rocket) is that aircrews operating in restricted areas must continually search the areas for the itinerant, unknowing, yet seemingly omnipresent "intruder." Don't *assume* that just because you are operating in a *Restricted Area, Warning Area, or Prohibited Area* that these *spaces* are in fact – *sacred*. They are supposed to be, but remember those "2 percent that don't get the word!" Aircrews must investigate target areas prior to utilization, particularly if there are uncontrolled aerodromes in the vicinity, and be on a constant lookout for the unscheduled transient who probably does not know that he is executing a shortcut to safety. One cannot become complacent under the "umbrella of the restricted areas." Military pilots know the hazards that can be associated with restricted areas – nonmilitary pilots may not be aware of the hazards that they expose themselves to while transiting these areas. Good, solid lookout doctrine is still one of the best insurance policies when airborne. It's a practice well worth preaching about. ◄

☆U.S. GOVERNMENT PRINTING OFFICE: 1979—635-002/10

Forget the preflight, we're *in a hurry!*

Attitudes are like altitudes, watch them or you'll wind up on the ground!

Idea contributed by AT2 Robbie T. See, HS-15



STUDY YOUR APPROACH

Idea contributed by AD2 Stan Kapp, VR-58